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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,792	08/28/2001	Akira Fujishima	4468-022	2863

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EXAMINER

THOMAS, BRANDI N

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,792

Applicant(s)

FUJISHIMA ET AL.

Examiner

Brandi N Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 17-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 and 6. 6) ☒ Other: *Detailed Action*.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-16 in Paper No. 8 is acknowledged.
2. Claims 17-48 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected embodiment, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed on 12/19/01 and 4/8/02. An initialed copy is attached to this Office Action.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wariishi et al. (6376765 B1) in view of Itaya et al (5876581).

Regarding claim 1, Wariishi teaches a photoreactive device (figure 1) comprising: a semiconductor (21) having a conduction band with a potential and being capable of producing electrons under the irradiation of light on said semiconductor; and an oxidation*reduction material having a redox potential being positive compared with said potential of said conduction band, wherein said electrons produced by said semiconductor are supplied into said oxidation*reduction material converted for storing said electrons in said material (col. 22, lines 39-57) except that it does not show an crystalline structure. Itaya et al. shows that it is known to provide a crystalline structure for linking iron II and iron III of a cyano group. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Wariishi et al. with the crystalline structure of Itaya et al. for the purpose of linking iron II and iron III of a cyano group (col. 16, lines 49-59).

Regarding claim 2 and 8, Wariishi et al. teaches the claimed invention except that it does not show an the oxidation*reduction material reduced in the presence of a cation. Itaya et al. shows that it is known to provide the presence of a cation for providing an electrolytic process for the synthesis of iron hexacyanoferrate (II). Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Wariishi et al. with the cation of Itaya et al. for the purpose of providing an electrolytic process for the synthesis of iron.hexacyanoferrate (II) (col. 2, lines 29-35).

Regarding claim 3, Wariishi et al. teaches the claimed invention except that it does not show the crystalline structure oxidation*reduction material is an electrochromic material. Itaya

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et al. shows that it is known to provide oxidation*reduction material is an electrochromic material for reversibly changing the mixed valence between trivalence and divalence. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Wariishi et al. with the electrochromic material of Itaya et al. for the purpose of reversibly changing the mixed valence between trivalence and divalence (col. 16, lines 66-67 and col. 17, lines 1-3).

Regarding claim 4, Wariishi et al. teaches oxidation*reduction material is an oxide semiconductor of tungsten bronze (col. 24, lines 10-26) except that it does not show crystalline structure. Itaya et al. shows that it is known to provide a crystalline structure for linking iron II and iron III of a cyano group. Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Wariishi et al. with the crystalline structure of Itaya et al. for the purpose of linking iron II and iron III of a cyano group (col. 16, lines 49-59).

Regarding claim 5, Wariishi discloses, as in figure 1, a substrate (50, 50a), a layer for storing electrons made of said oxidation *reduction material on said substrate (20), and a semiconductor layer made of said semiconductor on said substrate (10, 10a) (col. 22, lines 39-45). Regarding claim 6, Wariishi et al. further discloses a porous semiconductor layer (21).

Regarding claims, 7, 15, and 16, Wariishi et al. disclose the claimed invention except for the oxidation*reduction material and the semiconductor made from powder, the translucent member is a window, and an ornament. It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the oxidation*reduction material and the semiconductor of powder, the translucent member to be a window, and an ornament

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comprising the device, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

Regarding claim 9, Wariishi et al. teaches the claimed invention except that it does not show a conductor that is insoluble in water. Itaya et al. shows that it is known to provide a conductor is substantially insoluble in water because of its zeolitic nature (col. 4, lines 3-15). Therefore it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teaching of Wariishi et al. with the conductor of Itaya et al. for the purpose of providing a zeolitic nature (col. 3, lines 4-15).

Regarding claim 10, Wariishi further discloses for use in a gaseous phase (col. 5, lines 44-57).

Regarding claim 11, Wariishi further discloses wherein the reflectance of visible light of said oxidation*reduction material may be changed when light is irradiated on said device (col. 23, lines 15-20).

Regarding claim 12, Wariishi further discloses detecting the light intensity of light irradiated on said device based on the change of a property of said oxidation*reduction material (col. 54, lines 47-54).

Regarding claim 14, Wariishi et al. further discloses a translucent member (50, 50a) comprising a main body of a translucent material (col. 22, line 37).

Allowable Subject Matter

7. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 13, wherein the claimed invention comprises a device for detecting humidity based of change of a property of said oxidation*reduction material depending on said humidity, as claimed.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakurai et al. (6310282) discloses a photovoltaic conversion element, which makes it possible to install it in the interior of a display element.

Watanabe et al. (5874701) discloses a photocatalytically treatment process, which does not necessitate the use of a special light source for excitation of a photocatalyst.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N Thomas whose telephone number is 703-308-3095. The examiner can normally be reached on 7-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4883.

BNT

BNT

A handwritten signature in black ink, appearing to read 'Ricky Mack', with a long horizontal flourish extending to the right.

RICKY MACK
PRIMARY EXAMINER